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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,083

01/18/2006

Tomoyuki Nishimoto

NISHIMOTO 8

5587

1444 7590 03/14/2008  
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EXAMINER

LAU, JONATHAN S

ART UNIT

PAPER NUMBER

1623

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,083	<b>Applicant(s)</b> NISHIMOTO ET AL.	
	<b>Examiner</b> Jonathan S. Lau	<b>Art Unit</b> 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3,10,11,13 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,10,11,13 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This application is the national stage entry of PCT/JP04/10225, filed July 16, 2004; and claims benefit of foreign priority document JP2003-276632, filed July 18, 2003. Currently an English language translation of the foreign priority document has not been filed.

This Office Action is responsive to Applicant's amendment and remarks filed 21 Dec 2007, in which 1, 2, 4-9 and 14 are cancelled, and claims 3, 10, 11 and 13 are amended.

Claims 3, 10, 11, 13 and 15 are pending in this application.

### ***Objections Withdrawn***

Applicant's amendment, filed 21 Dec 2007, with respect to the objections regarding minor informalities in the specification have been fully considered and found to be persuasive to remove the objection as the amendment addresses the issues raised in this objection.

Therefore this objection is withdrawn.

### ***Rejections Withdrawn***

Applicant's amendment, filed 21 Dec 2007, with respect to the rejection of claims 11 and 13 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kubota et al. (WIPO publication WO 01/090338, of record, US patent US 7,192,746 submitted as an English language equivalent, of

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record), has been fully considered and found to be persuasive to remove the rejection as the limitations in the amended claims and the breadth and scope of the claims have been changed.

Therefore the previously stated rejection is withdrawn

The following rejections of record in the previous action are maintained:

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 3 as amended now is rejected under 35 U.S.C. 103(a) as being unpatentable over as being unpatentable over Maruta et al. (US patent 6,017,899,

issued 25 Jan 2000, of record) in view of Kubota et al. (WIPO publication WO 01/090338, published 29 Nov 2001, of record, English language equivalent US patent 7,192,746, of record). Herein citations of Kubota et al. refer to column and line numbers in US patent 7,192,746.

Maruta et al. discloses  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, identified as PI, and  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose, identified as PII. See column 19, line 52. Maruta et al. discloses a method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme. See column 16, lines 64-67 and column 17, lines 1-5. Further, Maruta et al. teaches enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose and  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose. See column 18 lines 57-67 and column 19 lines 37-40. Maruta et al. teaches a saccharide composition comprising trehalose and non-reducing saccharides consisting of one or more glucose molecules bound to one trehalose molecule via the  $\alpha$ -1,4 linkage or the  $\alpha$ -1,6 linkage and a member selected from the group consisting of foodstuffs, cosmetically acceptable materials, and pharmaceutically accepted materials. See claim 1 of Maruta et al. Maruta et al. further specify a food product in claim 8, a cosmetic in claim 9, and a pharmaceutical in claim 10.

Maruta et al. does not teach does not teach 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose (instant claim 3).

Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, which is a 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose or a non-reducing saccharides having a trehalose structure as an end unit, and its method of making using a saccharide-transferring enzyme as either anticipated

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or obvious. See Kubota et al. column 44, lines 25-67. Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of four glucose units which differs from  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of four glucose units, in the position of the  $\alpha$ -glycosidic bonds. See Kubota et al. column 44, lines 42-50.

It would have been obvious to combine the method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme and enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose disclosed by Maruta et al. with 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose taught by Kubota et al. Maruta et al. discloses "a great demand for decreasing or even eliminating the reducing power of reducing partial starch hydrolysates without changing glucose units as a constituent saccharide thereof." See Maruta et al. column 2, lines 43-45. Maruta et al. disclose  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose and  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of three glucose units. In view of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose disclosed by Kubota et al., 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of three glucose units, instant claim 3 would have been obvious to one of ordinary skill in the art at the time of invention.

Response to Remarks:

Applicant's remarks, filed 21 Dec 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive to remove the rejection. Applicant asserts that Kubota et al. does not teach the method for making 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, citing that Kubota et al. did not disclose the structure of the

“glycosyl-transferred products” and that it was not known before the present invention was made that that 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose is produced when  $\alpha$ -isomaltosyl-transferring enzyme is allowed to act on partial starch hydrolysate in the presence of trehalose as an acceptor.

“Where the claimed and prior art products ... are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. ... the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product.” See MPEP 2112.01 I. As cited above (Kubota et al. column 44, lines 25-67), the prior art product is produced by identical or substantially identical processes. Therefore there is a *prima facie* case that Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose as “glycosyl-transferred products.”

“Obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established. In re Rijckaert, 9 F.2d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993).” See MPEP 2141.02 V. However, the process disclosed by Kubota et al. was known to make 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose prior to the time the instant invention was made. The  $\alpha$ -isomaltosyl-transferring enzyme disclosed by Kubota et al. is known in the prior art to catalyze the  $\alpha$ -1,3-intermolecular transglycosylation of the isomaltosyl residue onto a glucose group (column 43, lines 15-28). Therefore it would have been known that the process disclosed by Kubota et al. produced 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, the product of  $\alpha$ -1,3-intermolecular

transglycosylation of the isomaltosyl residue onto  $\alpha,\alpha$ -trehalose, at the time of the instant invention was made.

Maruta et al. discloses enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose from non-reducing saccharides having a trehalose structure as an end unit. The combination of enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose from non-reducing saccharides having a trehalose structure as an end unit disclosed by Maruta et al. with the teaching of 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose by Kubota et al., a non-reducing saccharides having a trehalose structure as an end unit, renders 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose obvious. The combination of Maruta et al. and Kubota et al. is motivated as disclosed by Maruta et al. of "a great demand for decreasing or even eliminating the reducing power of reducing partial starch hydrolysates without changing glucose units as a constituent saccharide thereof."

Therefore the rejection is deemed proper and made **FINAL**.

The following are new or modified rejections necessitated by Applicant's amendment filed 21 Dec 2007, wherein the limitations in pending claims 10, 11, 13 and 15 as amended have been changed, as claims 10, 11, 13 have been amended and claim 15 depends from amended claims. The limitations in the amended claims and the breadth and scope of the claims have been changed.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:



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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 10, 13 and 15 as amended now are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruta et al. (US patent 6,017,899, issued 25 Jan 2000, of record) in view of Kubota et al. (WIPO publication WO 01/090338, published 29 Nov 2001, of record, English language equivalent US patent 7,192,746, of record). Herein citations of Kubota et al. refer to column and line numbers in US patent 7,192,746.

Maruta et al. discloses  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, identified as PI (column 19, line 52). Maruta et al. discloses a method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme (spanning column 16, lines 64-67 and column 17, lines 1-5). Maruta et al. discloses enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose (column 18 lines 57-67 and column 19 lines 37-40). Maruta et al. teaches a saccharide composition

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comprising non-reducing saccharides consisting of one glucose molecule bound to one trehalose molecule and a member selected from the group consisting of foodstuffs (examples B-4 and B-5, column 31), cosmetically acceptable materials (example B-13 in column 33), and pharmaceutically acceptable materials (example B-14 spanning columns 33 and 34).

Maruta et al. does not teach does not teach the specific compounds 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose and 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose.

Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, which is a non-reducing saccharide having a trehalose structure as an end unit, and its method of making using an  $\alpha$ -isomaltosyl-transferring enzyme using trehalose and panose, O- $\alpha$ -D-glucopyranosyl-(1 $\rightarrow$ 6)-O- $\alpha$ -D-glucopyranosyl-(1 $\rightarrow$ 4)-D-glucose, a saccharide having a glucose polymerization degree of 3 and bearing  $\alpha$ -1,6 and  $\alpha$ -1,4 glucosidic bonds (column 44, lines 25-67).

It would have been obvious to combine the method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme followed by enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose disclosed by Maruta et al. with the teaching of Kubota et al. of the method of making 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose using an  $\alpha$ -isomaltosyl-transferring enzyme, a method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme. Maruta et al. discloses "a great demand for decreasing or even eliminating the reducing power of reducing partial starch hydrolysates without changing glucose units as a constituent saccharide thereof"

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(Maruta et al. column 2, lines 43-45). Maruta et al. discloses production of  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of three glucose units. Combining the teaching of making 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose by Kubota et al., a non-reducing saccharides having a trehalose structure as an end unit, with the process of Maruta et al. renders obvious the process for producing 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose by enzymatic reaction of glucoamylase. One of ordinary skill in the art at the time of the invention would have a reasonable expectation of success in combining Maruta et al. with the teaching of Kubota et al. to produce 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose because Maruta et al. discloses glucoamylase hydrolyzes  $\alpha$ -1,4 and  $\alpha$ -1,6 glycosidic bonds (Maruta et al. column 19, lines 20-23) and  $\beta$ -amylase hydrolyzes only  $\alpha$ -1,6 glycosidic bonds to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose (Maruta et al. column 19, lines 35-40).

Response to Remarks:

Applicant's remarks, filed 21 Dec 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive. Applicant asserts that Kubota et al. does not teach the method for making 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, citing that Kubota et al. did not disclose the structure of the "glycosyl-transferred products" and that it was not known before the present invention was made that that 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose is produced when  $\alpha$ -isomaltosyl-transferring enzyme is allowed to act on partial starch hydrolysate in the presence of trehalose as an acceptor.

"Where the claimed and prior art products ... are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. ... the *prima facie* case can be rebutted by evidence

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showing that the prior art products do not necessarily possess the characteristics of the claimed product." See MPEP 2112.01 I. As cited above (Kubota et al. column 44, lines 25-67), the prior art product is produced by identical or substantially identical processes. Therefore there is a *prima facie* case that Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose as "glycosyl-transferred products."

"Obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established. In re Rijckaert, 9 F.2d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993)." See MPEP 2141.02 V. However, there is evidence that supports the finding that the process disclosed by Kubota et al. was known to make 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose prior to the time the instant invention was made. The  $\alpha$ -isomaltosyl-transferring enzyme disclosed by Kubota et al. is known in the prior art to catalyze the  $\alpha$ -1,3-intermolecular transglycosylation of the isomaltosyl residue onto a glucose unit (Kubota et al. column 43, lines 15-28). Therefore it would have been known that the process disclosed by Kubota et al. produced 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, the product of  $\alpha$ -1,3-intermolecular transglycosylation of the isomaltosyl residue onto a glucose unit of  $\alpha,\alpha$ -trehalose, at the time of the instant invention was made.

Applicant asserts that neither Kubota et al. nor Maruta et al. disclose the process for producing 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose by enzymatic reaction of glucoamylase. As recited above, Maruta et al. discloses enzymatic hydrolysis of non-reducing saccharides having a trehalose structure as an end unit by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose. Maruta et al. does not specifically disclose this process using 3- $\alpha$ -glucosyl

$\alpha,\alpha$ -trehalose. Kubota et al. remedies the deficiency of Maruta et al. by teaching 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose. Combining the teaching of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose by Kubota et al., a non-reducing saccharides having a trehalose structure as an end unit, with the process of Maruta et al. renders obvious the process for producing 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose by enzymatic reaction of glucoamylase.

Claim 11 as amended now is rejected under 35 U.S.C. 103(a) as being unpatentable over Mandai et al. (US Patent 5,780,620, issued 14 Jul 1998, cited in PTO-892) in view of Kubota et al. (WIPO publication WO 01/090338, published 29 Nov 2001, of record, English language equivalent US patent 7,192,746, of record). Herein citations of Kubota et al. refer to column and line numbers in US patent 7,192,746.

Mandai et al. discloses a process for producing a non-reducing oligosaccharide bearing a trehalose structure in the molecule (column 1, lines 46-50), an  $\alpha$ -glycosyl trehalose, produced by reacting an aqueous solution comprising  $\alpha$ -glucosyl saccharide and a non-reducing saccharide bearing a trehalose structure at its end to the action of a saccharide-transferring enzyme (column 1, lines 60-66) followed by collecting the resulting product (spanning column 4, lines 61-67 and column 5, lines 1-5). Mandai et al. discloses the use of saccharide-transferring enzymes that are not  $\alpha$ -isomaltosyl-transferring enzyme (column 3, lines 33-36), for example cyclomaltodextrin glucanotransferase.

Mandai et al. does not specifically disclose the use of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose as the non-reducing saccharide bearing a trehalose structure at its end.

Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, which is a non-reducing saccharide having a trehalose structure as an end unit (column 44, lines 25-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the process for producing a non-reducing oligosaccharide bearing a trehalose structure in the molecule disclosed by Mandai et al. with the teaching of Kubota et al. of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide having a trehalose structure as an end unit. One of ordinary skill in the art at the time of the invention would be motivated to perform the process disclosed by Mandai et al. using the compound taught by Kubota et al. because Mandai et al. discloses "there has been a strong demand for the development of higher non-reducing oligosaccharides which are superior in stability, digestibility and assimilability, as well as having an appropriate viscosity, less or no susceptibility to crystallization or superior solubility when in crystalline form" such as non-reducing oligosaccharide bearing a trehalose structure in the molecule (Mandai et al. column 1, lines 38-50). One of ordinary skill in the art at the time of the invention would have a reasonable expectation of success because the process involves reaction at the  $\alpha,\alpha$ -trehalose group common to both the non-reducing oligosaccharide bearing a trehalose structure in the molecule disclosed by Mandai et al. and the 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose taught by Kubota et al.

Response to Remarks:

Applicant's remarks, filed 21 Dec 2007, with respect to the above ground of rejection, has been fully considered and not found to be persuasive. Applicant asserts that Kubota et al. does not teach the method for making 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose,

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citing that Kubota et al. did not disclose the structure of the “glycosyl-transferred products” and that it was not known before the present invention was made that that 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose is produced when  $\alpha$ -isomaltosyl-transferring enzyme is allowed to act on partial starch hydrolysate in the presence of trehalose as an acceptor.

“Where the claimed and prior art products ... are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. ... the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product.” See MPEP 2112.01 I. As cited above (Kubota et al. column 44, lines 25-67), the prior art product is produced by identical or substantially identical processes. Therefore there is a *prima facie* case that Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose as “glycosyl-transferred products.”

“Obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established. In re Rijckaert, 9 F.2d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993).” See MPEP 2141.02 V. However, there is evidence that supports the finding that the process disclosed by Kubota et al. was known to make 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose prior to the time the instant invention was made. The  $\alpha$ -isomaltosyl-transferring enzyme disclosed by Kubota et al. is known in the prior art to catalyze the  $\alpha$ -1,3-intermolecular transglycosylation of the isomaltosyl residue onto a glucose unit (Kubota et al. column 43, lines 15-28). Therefore it would have been known that the process disclosed by Kubota et al. produced 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, the product of  $\alpha$ -1,3-intermolecular transglycosylation of the isomaltosyl

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residue onto a glucose unit of  $\alpha,\alpha$ -trehalose, at the time of the instant invention was made.

### ***Conclusion***

No claim is found to be allowable.

Applicant's amendment necessitated the new or modified ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan S. Lau whose telephone number is 571-270-3531. The examiner can normally be reached on Monday - Thursday, 9 am - 4 pm EST.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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